:Beaglehole and Beaglehole E-5 (1934-5)1938 Pukapukans

and talo are scarce. At the present time, the island water supply from concrete cisterns is rationed out to the families of the island from July until the first heavy rains.

The seasonal changes, though important for living conditions, have not involved any great seasonal rhythm of labor. Whereas house repairing for the western village is in October and November, that for the eastern village is in April and May, when the steady winds blow from the south and east. There is a tendency to reserve activities centered round the building of new houses and canoes for the cooler midyear months, and at the beginning of this period there is a spurt of building in all villages. Other activities go on throughout the year. Twice each year, depending on the maturity of the plants, all the talo beds on Wale and Motu Ko are fertilized. With the arrival of May and the beginning of the best deep-sea fishing, there is a general repairing of the fishing gear, including canoes, paddles, hooks, fishline, and anchor line. Today there is seasonal activity in copra making, the people from each village going to their respective reserves from March to April, and a second time from August to September.

Water

Water for domestic use was formerly obtained exclusively from seep holes and wells sunk close to the beach above high tide level. This slightly brackish water is still used for bathing and other purposes by all three villages when they visit their reserves and, owing to the distant location of a better supply, by most Yato villagers all the time. Today three concrete cisterns on Wale store water draining from the church and courthouse roofs. This water is used for drinking and washing in the rainy season, in the dry season for drinking only.

Plant Life

The soil of the whole atoll is poor, mostly infertile sand and coral gravel, and in consequence vegetation is sparse. Tropical bush grows luxuriantly in a few sections. Of the food plants, coconuts grow well, but talo and bananas grow only in excavated pits that have been filled with plant material and must be fertilized with leaves and ferns twice each year. As an aid to growth of bananas, old pieces of iron are buried among the roots. A few papaya and limes grow on Motu Kotawa. The kava plant (*Piper methysticum*) does not grow on the atoll. Specimens of all plants growing in Pukapuka, as identified by Marie C. Neal, E. H. Bryan, Jr., and F. Raymond Fosberg, are recorded in the following list:

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Kave (Cassytha filiformis)
Lakau yili (Pemphis acidula)
Laukotawa (Aspienium nidus)
Laupoue (Ipomoea grandiflora)
Limu puniu (a moss) (?)
Maile (Polypodium scolopendria)
Moemoe (Boerhaavia tetrandra)
Mouku (Fimbristylis cymosa variety microcephala)

Nau (Lepidium bidentoides)
Niu, coconut (Cocos nucifera)
Ngangie (Pemphis acidula)
Ngayu (Scaevola frutescens)
Nonu (Morinda citrifolia)
Nuna (Fleurya ruderalis)
Ongoongo (Euphorbia prostrata)
Polapuka (Solanum viride)
Polo (Hedyotis romansoffiensis)
Puapua (Guettarda speciosa)
Puka (Ceodes umbellifera)
Pukama (Hernandia ovigera)
Pulaka (Cyrtosperma merkusii)

Pulumu (Jussiaea erecta)
Taeyinu (Tournefortia argentea)
Taumakomako (Achyranthes velutina)
Tiale (Gardenia tahitensis)
To, sugar cane (Saccharum officinarum)
Vavai (Triumfetta procumbens)
Vayavaya (? Lepturus repens)
Vayavaya ui (? Cyperus ferax)
Wakanava (Cordia subcordata)
Wala (Pandanus sp.)
Wau (Pisonia velutinus)
Wawa, talo (Colocasia antiquorum variety esculenta)
- kele
- kiskie
- kula
- mawolawola
- newunewu
- pelena
- polapola
- pongi

} native varieties of talo

Welo (Ficus tinctoria)
Wetai (Psilotum nudum)
Wetau (Calophyllum inophyllum)
Wuti (banana) (? Musa sapientum)
- malie
- mitiluki
- pukapuka
- talua

} native varieties of banana

Wutu (Fagraea berteriana)
Yamuti (Suriana maritima)
Yulu (? Pandanus)

Note: Of the plants listed, *pukama*, *makowaru*, *puapua*, and *wetau* are used for canoes, implements and utensils; *puka* is used mainly for canoe outriggers; the bark of the *wau* is used for fishlines and cordage (termed *wau*) for fishnets. The coconut supplies material for the woman's kilt, the man's rough malo, sennit cord for fishlines, anchor lines, and general lashing, also material for rough mats, food platters, baskets, house thatch. It is one of the chief foods of the island. Pandanus is used for mats, for men's malos, today for house thatch. Its wood is valuable for house frameworks, and the ripe fruit is eaten. Pukapukans distinguish in terms of leaf shape two varieties of *Pemphis acidula*: *ngangie* and *lakau yili*. *Ngangie* is the preferred wood for fishhooks, for implements and outrigger connectives, but failing this wood, *lakau yili* is recognised as a valuable substitute. Botanically the two plants appear to be similar. The flower of the *tiale* is used for wreaths and decorations. The bark of the *welo* was formerly used for decorating ceremonial headdresses. *Nonu* makes the red dye used for mat designs. All the creepers such as *moemoe*, *laupoue* and *ongoongo*, are used extensively for wreaths and decorations. The one *wutu* tree on the island is reported to have grown from a drift seed.

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The general name for a plant is *lakau*. Root is *aka*. The trunk of a tree is *pu lakau*. A moss or lichen is *limu*. The fungoid "toadstool" growth on a fallen tree is termed *laulau talinga*. A seed is *wua*, a flower *pua*, a leaf *lau*. The name of the plant is added to these words to particularize: *wuapuapua* (*puapua* seed), *puaniu* (coconut flower), *akauula* (aerial root of the pandanus), *launiu* (coconut leaf, leaflet). The seeds of certain trees, however, have distinctive names: *pei*, seed of the *wetau* tree, and *kalaka*, *pukama* seed. The word *tiale* is used for both plant and flower of that name.

The Pukapukans are intimately familiar with the botany and horticulture of coconut and talo (pp. 81-90).

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flower of the *uvtau* tree. As he baited his hook and dropped the line into the hole he made this chant: "Mauieuli, Mauiepopo, ta te matau, e matau lave" [Mauieuli, Mauiepopo, (we) prepare the hook, the fast-gripping hook]. The *tuna* took the bait and was soon fast fixed to the hook. The man hauled the fish from the hole, and when he was about to club it to death the fish spoke, saying, "Hear my words before you kill me. When I am dead, cut off my head. Let your wife eat my body, but my head you must plant in the ground in front of your house." The man listened well to the words of the *tuna*. Then he killed the fish, cut off its head, and planted it in front of his house. The body he wrapped in leaves, cooked in the oven, and took to his wife. She saw the eel and said, "Here you are at last with just the kind of fish I have been longing for." With these words she ate the fish and was satisfied.

After a time the head grew up into a tree which later bore nuts, one nut on the topmost stem, two nuts on the second stem, three nuts on the third stem, and so on up to ten nuts on the tenth stem. Then later it had twenty stems and on the twentieth were twenty nuts. Finally the tree bore a heavy crop of nuts. As the earliest nuts ripened and became hard, they dropped from the tree to the ground. Mauieuli collected all the nuts. Then he had the idea of giving nuts to all the islands in the Pacific. He divided the nuts into two parts; one part for the islands of the western Pacific, the other part for the islands of the eastern Pacific. Then he took one nut at a time from the western pile and threw it into the air. As he threw he called out the name of an island and there the nut landed. When the western pile was finished he started on the eastern pile, throwing a nut into the air as before for each island in the eastern Pacific. In this way all the islands of the Pacific received the coconut. After he had used all the nuts from the tree, he thought, "In this division I have forgotten all about Pukapuka, which is neither east nor west. Te Ulu-o-te-watu has received no nuts from this division." He looked around on the ground and found one very small, dry nut. He held up this nut and said, "This shall be the nut for Pukapuka." Thus in the end all the islands shared in the nuts from the tree that grew from the head of the *tuna* fished by Mauieuli.

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After telling this story, informants added that the first nut was planted in the reserve of Uta. It is a characteristic Pukapukan touch to say that Pukapuka received only a wizened nut after almost being left out of the division altogether. In the story of Lata, when Lata divided the huge *Tridacna* shellfish (*paysa*), he forgot Pukapuka in the division and was able to give the island only the rock to which the *paysa* was growing. Similarly Pukapuka was the last Polynesian island to receive Christianity and among the last islands to receive a visit from anthropologists!

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Coconut trees are empirically divided into 17 classes in terms of the bearing qualities of the tree and the shape or quality of the husk:

Niu lakita: produces nuts that are small but abundant; it sometimes ceases bearing for a long time but usually bears again after this pause.
Niu wata: bears well and continuously but not abundantly.
Niu tuiti: does not bear well and is not often planted.
Niu koalia: bears well but the nuts show a tendency to fall from the tree before they are mature.
Niu wuakole: a non-bearing tree with male flowers.
Niu malie: bears well and has good eating nuts.
Niu mangalo: bears the sweet eating coconut with edible husk.
Niu lalilili: bears very small nuts.
Niu lamatoa: very large nuts.
Niu kawa loloa: nuts with long husks.

1:Beaglehole and Beaglehole E-5 (1934-5)1938 Pukapukans

245 Niu kawa nunui: nuts with coarse thick husks.
Niu kawa lapalapa: nuts with thin husks.
242 Niu kawa pukupuku: nuts with round husks.
Niu kawa iliiki: nuts that are small and have small husks.
Niu kawa pipiki: nuts of which the husks are tough and hard to remove.
824 Niu mawakivaki: nuts that are enclosed in a soft husk easily removed.
Niu pulu vunu: the best nuts for making sennit.
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Coconut trees are also classified in terms of the color of the nut. Six types are recognised:

Niu uyi: dark green.
Niu kawa kesulusu: pale green.
Niu kawa meiomeio: brownish red.
Niu meio: deep brown, almost red.
Niu meio toto: almost blood-red.
Niu kawa uyiuyi: midway between dark and pale green.

Most nuts are self-planted, but when a man wishes to plant one for himself he makes his selection of planting nut in terms of the above empirical classes. Similarly when a boy is sent to gather nuts, the stage of the nut is mentioned or the purpose for which it is desired; and the boy is told to get it from one of the above types of trees. A man is familiar with all the trees that he controls and with most of the trees on the land sections (*kauu*) of his paternal lineage; by giving specific directions to the nut-gatherer, he can always be sure that he receives the nut best suited to the purpose in hand.

245 Nuts planted by hand should be planted at the new moon; as the moon
782 grows bigger, so will the tree grow larger and never cease to bear. Trees from nuts planted at the time of the full moon will at first bear well, but in successive bearings the number of nuts will be fewer and fewer, until the tree ceases to bear. Informants say that the young people do not pay attention to this planting rule today; hence the fertility of the coconut trees on the island is slowly waning. Formerly when nuts were planted a simple prayer was said to the god Tamayei, that he make the tree grow well. At the time of the *laukau* food division of the chief, gifts were made to Tamayei to thank him for his assistance in producing fertile trees.

245 A tree that does not grow well is *niu tau makulu*. Only certain trees bear the sweet-husked nut (*niu mangalo*); the majority bear a nut with a bitter husk (*niu kava*). Though he can give no reason for this difference, every man knows which of his trees is a *niu mangalo*. As there are no obvious distinguishing features about the tree or the nut, save that of taste, ability to distinguish a *mangalo* tree is based on experience over a number of years. It is not uncommon to allow coconut trees to grow from nuts planted near the cook houses. These grow into small trees and provide a ready supply of leaves and leaflets for use in making platters, baskets, mats, and mosquito switches.

1:Beaglehole and Beaglehole E-5 (1934-5) 1938 Pukapukans

In husking (*yoka*), a nut is brought down on the point of the stick so that the line of penetration is through one of the three longitudinal ridges (*pawaga*) in a horizontal plane. A longitudinal section of husk is removed by levering the nut outward and downward from the stick, and the process of impaling and levering is continued until all the husk is removed. When it is desired to preserve the edible husk (*mukomuko*) much care is taken and the husk is torn off (*yuhili*) gently rather than levered off in large sections.

Drinking nuts are husked completely smooth (*yoka molemole*) or so as to leave a longitudinal strip of husk attached to each nut (*yoka ma te kayuni*). A thin length of fiber is raised from this strip. Pairs of nuts are tied together (*kayuni*) by these fibers, making it possible to throw them over a rough carrying pole (*amonga*) of coconut midrib and thus conveniently carry (*amo*) them from the bush to the home.

A heap of *yukoli* nuts gathered together from the ground where they have fallen is termed *putunga* (pile), whether it is a large or a small heap. Reference to these piles is in terms of the number of nuts gathered, whether 100, 200, or more. Thus a man asks about a pile of nuts, "Na ai te lau nei?" (Whose hundred is this?).

The husked drinking nut is opened by piercing or by cracking:

The eye (*mata*), which is in the widest of the spaces between the three longitudinal ridges on the surface of the nut and which is filled with soft tissue through which the nut sprouts, is pierced (*take*) with a coconut leaflet midrib or with the pointed end of the *kalohalo* implement. To open the nut by cracking, it is held in the hand and the shell at the base (*mulimuli*) is cracked against a stone. When done by a skillful hand, the base of the nut cracks evenly all around and is lifted with the fingers without loss of the liquid. Today nuts are more often cracked by three sharp blows with a knife blade on the base. After the liquid is drunk, the nut is broken open (*wowo*) by knocking it against a stone. The soft flesh is scooped out with the thumb and fingers; harder flesh that does not yield readily to the pressure of the thumb is scraped out (*wakamaaka*) with a scraper (*kalokalo*).

TALO

The following named varieties of talo are indigenous to Pukapuka: *mawolawola, wakawotu, wakena, kele, pongi* (slow-growing species), *pelewa, talaki, kalelea, newunewu* (slow-growing species), *kula, kiekie, uli, koyikoyi*. All are grown on Pukapuka today save *talo koyikoyi* which was practically all destroyed by the tidal wave of 1914. Introduced varieties are named after the land of importation; as talo Tawiti (Tahiti), talo Polapola (Borabora), talo Niue, and so on.

The origin of talo and *pulaka* in the world is recounted in the story of Maui (1). Some informants incline to the belief that only one variety of talo was introduced by the gods in the first place and that all other varieties sprang from this one by some power of the gods—a rationalization perhaps of the fact that strains of talo are so mixed today that it is hard to grow one true to type. This causes trouble on talo bed boundaries. One woman plants one variety on her boundary, and her neighbor plants another variety on her side of the boundary, hoping thus to keep the boundary between the

2: Macgregor E-2 (1933) 1935 Pukapukans
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[Information in this source which is either inadequate, incorrect or duplication has only been filed in category 116: for list of plants and their cultural uses, see p. 6.]

The islands are surrounded by a continuous reef. Entrance to the land-locked lagoon is through a pass in the western reef wide enough for canoes but not for larger craft. All goods must be trans-shipped and carried ashore in small boats.

The climate of Pukapuka is said to be remarkably equable and the rainfall usually sufficient. During the winter, April to September, the days become exceedingly hot and breathless when the wind drops, and the vegetation often becomes dry and even scorched. It is a season of suddenly changing and heavy winds which descend with little warning, and may destroy all the coconut trees. In 1914 a great tidal wave washed over most of the atoll.

Each of the islets has seep holes or wells of brackish water which the natives can drink, and formerly water was caught from the frequent sea showers which pass over the island; but neither of these sources insured an unfailing supply. Today water caught from the roofs of the church and meeting house is stored in reservoirs.

The flora includes several useful plants. Fair-sized *puka* trees (*Hernandia ovigera*) grow on Motu Kotava, but elsewhere the trees are small. *Akanava* (*Cordia subcordata*), a hard wood very resistant to water, grows on each islet. Canoes are made chiefly from sections of the trunks of these trees. *Puapua* (*Guetarda speciosa*) and *wetau* (*Calophyllum inophyllum*) are plentiful and are used in canoes when *akanava* is not available. *Puka* is used for outriggers and for easily worked implements and utensils. Coconut trees are plentiful. *Wau* (hau; *Hibiscus tiliaceus*) supplies a bast which is made into very strong fish line and cordage for fish nets. The wood is used in house construction and for fire plows. *Wetau* wood is used in making containers. *Ngangie* (*Pemphis acidula*), a bush which supplies strong, branched pieces of wood, grows on the atoll and is made into *Ruvettus* hooks. The *tsiale* (*Gardenia tahitiensis*) is a tree with deliciously fragrant flowers which are woven into head wreaths and used for decorating the body. At least two varieties of hala (*Pandanus*) grow on the atoll. The most common variety (*'ala*) is used in mat-making, and its fruit is an important food. The second variety (*kie*) is made into finer and softer mats and, formerly, into the men's garment (*malo*). Bryan (1) reports that no bread-fruit trees grow on the island.

The vegetable staples in the native diet are coconut and taro. Coconuts are abundant; in profitable seasons as much as 100 tons of copra are exported.

2:Macgregor E-2 (1933) 1935 Pukapukans

of copra are exported. Nine varieties of taro (*Colocasia esculenta*) grow on the island; *talo Borabora, talo maoraora, talo koli, talo uakene, talo nenengu, talo kula, talo pongi, talo taraki, talo 'enga'enga.* *Puraka* (*Cyrtosperma chamissonis*), a coarse tuber of the taro family with enormous heart-shaped leaves, is grown in the wet pits. This plant is said to have been introduced from the Cook Islands. Bananas (*wuti*), papayas, limes, and sugar cane grow on the island, but because of the poor soil the production is slight and contributes very little to the food supply. Hutchin (6, p. 173) states that sweet potatoes (*kumala*) and arrowroot were formerly grown.

Fish forms the chief flesh diet. Turtles are caught during the mating season when they are off the reefs and the females come ashore to lay their eggs in the sand. Pigs and chickens are kept on the island but are eaten only on occasions of celebrating some event.

Although Pukapuka was sighted by a European ship as early as 1765, it has enjoyed an existence remarkably free from intercourse with Europeans because of its isolation and its lack of natural resources. Captain Byron discovered the island on June 21, 1765, and named it "Danger Island" because of its treacherous submerged reefs and rapid currents. Lovett (8, p. 372) states that a native missionary teacher was on the island in 1857 and had proselytized most of the natives before the arrival of Reverend W. W. Gill, the first European missionary, in 1862. During the decade 1860-70 Peruvian slavers raided the island for laborers to carry to South America. In two visits they took 150 men and women, none of whom ever returned to their home (11).

The island was formally annexed by Great Britain in 1892. In 1901, by an Imperial Order in Council, Great Britain extended the boundaries of New Zealand to include the Cook Islands, Tongareva, Manihiki, Rakahanga, Palmerston, Pukapuka, and Niue. Pukapuka is now governed by the Cook Islands Administration. At present Mr. Geoffrey Henry, Resident Agent, directs the government, and with Mrs. Henry conducts the island school and cares for the health and sanitation. Most of the population belongs to the London Missionary Society Protestant church, which is under the direction of a native pastor. In 1919 Mr. Wicks, of the Seventh Day Adventist sect, arrived at the island and directed the building of a church during his temporary residence. A small group still retain their membership in this church. No European missionaries live on the island today.

11: Hutchin M-2 (1904) 1904 Pukapukans

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TRADITIONS AND SOME WORDS
OF THE LANGUAGE OF DANGER OR PUKAPUKA ISLAND.

By the Rev. J. J. K. Hutchin.

IN the month of May, 1904, accompanied by Lieut-Col. Gudgeon, C.M.G., I paid a visit to Danger Island, recently annexed to the Colony of New Zealand. It is a solitary atoll more than seven hundred miles to the north-west of Rarotonga, with a population of nearly five hundred people. Only one vessel has visited the Island since the visit of the s.s. "John Williams" in October, 1903. Owing perhaps to their want of communication with the outside world the majority of the people seem somewhat duller in intellect than the other Northern Islanders. One of the most intelligent of the natives is a man named Ura, and during our short stay there I gleaned the following information from him.

"Bukabuka was a rock in the ocean. A god named Tamaye watched the rock, and thought it to be of no use whatever. The rock, however, burst asunder, and a man appeared. He looked about him, and there was hardly standing room. He accordingly made the land of Bukabuka, and he was the ancestor of the people. His name was Uyo. His wife came from Tonga, and her name was Te Vao-pupu. Their son was named Tu-muri-vaka, and their daughter was named Te Mata-kiata.

In very ancient times two warriors came from Tonga, one was named Tokai-poea, and the other Taupe-roa, and they settled the people in three districts, one was called Avarua or Kotiporo, another Te Awua (*v* pronounced like *w*) or Pana-uri, and the third Taka-numi or Uro-kava. In those days the *kumara*, the sugar cane, and arrowroot grew on this Island. (The *kumara* plant flourishes now but has no tubers; the sugar cane grows when planted in the *taro* patches, but there is no arrowroot there at the present time).

They went to many lands in ancient times. Their warriors went to the east and west, but not to the north or south. The people went from Bukabuka (its ancient name was Nukuroa) to Samoa, to Niué,